INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume IV, Issue I
August 2022
Available online at https://www.instabrightgazette.com

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A RECORD REVIEW AND ANALYSIS OF MOTORCYCLE ACCIDENTS IN LIGAO CITY

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ABSTRACT

Motor vehicle accidents are currently the third leading cause of death due to unintentional injury after falls and accidental drug overdose. In motorcycling, the first step in preventing injury is to minimize the probability of crashing. Not crashing and hitting your head is infinitely better than crashing and relying on your helmet to protect your head. The study analyzed the fatalities involved on the accidents involving motorcycle riders and conduct a comprehensive description of the phenomenon using qualitative document analysis to minimize the problem. Specifically, this study determines the number of accidents involving motorcycles from 2018 – 2021; identify the physical condition of the motorcycle drivers involved on the accidents in terms of: Injuries; and Fatalities. This is a qualitative analysis of the fatalities recorded by the said police station. As to the result there were overwhelming number of cases that was discovered and attributed to fatalities that was caused by using motorcycles. The researchers concluded that irresponsible driving always cause accident, the very purpose of the law is to promote safety among its users that is why intensified implementation of the law may reduce somehow the numbers mentioned here in the study.

Keywords: *Motorcycle, accidents, motorcycle riders, RA 10054, Bicol College, Philippines.*

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INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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INTRODUCTION

In motorcycling, the first step in preventing injury is to minimize the probability of crashing. Not crashing and hitting your head is infinitely better than crashing and relying on your helmet to protect your head. No helmet can protect against all possible impacts, and the impact may exceed the helmet's protection capability. No helmet protects any part of the head that it does not cover, so even if the head injury is avoided but you chose to wear a ¾ or ½ helmet you may have smashed your face or broken your jaw.

The core question is "Do motorcycle helmets work for their intended purpose?" The answer is a resounding "yes." Helmet use consistently has been shown to reduce motorcycle crash–related injuries and deaths. Reviews of the literature find strong evidence of effectiveness and conclude that use of motorcycle helmets (1) decreases the overall death rate from motorcycle crashes when compared with non-helmeted riders (2) decreases the incidence of lethal head injury in motorcycle crashes when compared with non-helmeted riders and (3) decreases the severity of nonlethal head injury in motorcycle crashes when compared with non-helmeted riders. Motorcycle helmets are found to reduce the risk of death by 42 percent and head injury by 69 percent in motorcyclists who crashed.

In general, research regarding helmet effectiveness were focused on: studies that look in-patient hospital data to compare the injury and death rates of helmeted with non-helmeted motorcycle riders; and studies that look on the change in death rates for states which have instated or repealed mandatory helmet laws or compare the death and injury rates in states which have mandatory helmet laws with states which do not have mandatory helmet laws.

The first type assesses the risk of being killed based on injured riders but because the severity of injury is often not reported in the study, the percentage of deaths varies considerably between the studies. The second type of study examines crash or injury data and, in that regard, provide us information regarding the impact of helmet use or non-use as well as the effect of mandatory helmet laws, and the helmet law studies in turn provide us information regarding the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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impact of helmet use. For these types of studies, it is difficult to account for all the factors which may affect the number of crashes, injuries and death of motorcycle riders so they need to be evaluated carefully. This is one reason; we feel reviews of the literature are so valuable because experts have evaluated the methodologies of the studies and only include studies for review that meet strict standards.

Metro Manila Accident Reporting and Analysis System (MMARAS) recorded a total of 65,032 accidents in the country's main metropolitan area in 2020, resulting in the death of 337 people. Broken down, Metro Manila averaged 178 road-crash incidents per day, with 50,230 cases resulting to damage to property, and 14,465 resulting in non-fatal injury.

While this number is far lower than the 121,771 total recorded accidents in 2019 (a drop of 46.6%), it bears noting the nationwide lockdown measures implemented throughout 2020 as a response to the COVID-19 pandemic drastically reducing the number of cars on the roads. Moreover, public transportation also saw a temporary ban during the lockdown.

This is partly the reason why the top month in terms of accidents in 2020 is February, with a total of 9,315 incidents. This is followed by January and October with 7,283 and 6,285 cases, respectively. Meanwhile, the lowest accident total was recorded in April 2020 during the height of the quarantine, with only 1,535 incidents recorded during the month.

Reflecting the WHO finding about vulnerable road users, the country also saw the number of motorcycle-related fatalities in Metro Manila rise slightly in 2020 in spite of the lockdowns. With the limited availability of public transport and physical distancing requirements, more people have shifted to two-wheelers as a method of mobility.

The 2020 MMARAS data showed that the number of fatal accidents involving motorcycles reached 229 last years, compared with 221 in 2019 or a 3.5% increase. However, the total number of motorcycle-related road crashes were recorded at 22,080 in 2020, versus 31,279 in 2019, still representing a 29.4% decrease overall. Accidents that caused non-fatal injuries similarly fell by 24.9%, 11,032 in 2020 versus 14,691 in 2019.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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About 13,004 people were involved in these accidents, or an average of 36 people per day. The corresponding figures for 2019 are 14,553 people in total and an average of 40 per day. According to the data, the highest number of deaths from motorcycle accidents occurred at night from 8 p.m. to 9 p.m. and from 10 p.m. to 11 p.m., during which 17 fatalities were recorded. Sideswipes caused the most damage to property in 3,420 cases, and injuries in 2,842 cases. Meanwhile, collisions with objects resulted in the most fatalities or 41 cases. Overall, the massive Quezon City logs the most road crashes in 2020 with 22,494 cases, with Manila following in at a distant second with a total of 6,655 incidents, and Makati City with 4,508 incidents. Pateros recorded the fewest number of accidents last year with just 115.

Based on the Record of the Ligao City Police Station provided to the researchers that on 2018 there were 392 accidents occurred and 256 of which involving motorcycle. Meanwhile on 2019, the incident increased to 400 and 234 were also linked to motorcycle and last year were 118 out of 209 incidents were also linked to the same cause and this year as of October there were 247 and also majority of it involving the said type of vehicle.

Head injuries lead to high mortality rates and incur enormous economic costs; they are the most serious public health problem for motorcycle riders, particularly in developing countries. In the USA, motorcycles are generally used for recreation and comprise ~2% of registered motor vehicles. In contrast, in many Asian countries, motorcycles are one of the most important means of transportation, and riders have especially high rates of injury. For example, motorcycle crashes account for 81% of head injuries in Vietnam and >50% of head injuries in Malaysia and Taiwan.

Empirical evidence strongly supports the conclusion that wearing a helmet protects motorcycle riders from the high risk of head injuries and death. This evidence has facilitated legislation requiring mandatory motorcycle helmet use in many states in the USA and in many other countries. Wearing a helmet effectively reduces head injuries among motorcyclists; even so, a substantial proportion of motorcycle riders who wear helmets still sustain head injuries in crashes. Three helmet types, full-face, open-face and half-coverage, are commonly used by

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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motorcycle riders; their effectiveness in preventing head injuries may differ and some types might even be inadequate. It is not uncommon to observe a helmet becoming detached in a motorcycle crash; for example, nearly one-fourth of helmets came off during crashes in Thailand and 5% in Los Angeles, CA, USA. Moreover, head injuries seem to occur more frequently and are more severe for riders who wear a non-standard helmet than those who wear a standard helmet. The use of borrowed and poorly fitting helmets is widely reported in many developing countries and more than one-third of riders exhibit improper helmet use, such as wearing it on the back of the head and having a loose chin strap.

To our knowledge, potential differences in the effectiveness of various helmet types have not been adequately examined, and no study has explored the effects of improper use of helmets on head injuries among motorcycle riders. To address these issues, a case–control study was conducted to examine the effectiveness of different helmet types and improper helmet use in protecting against head injuries among motorcyclists.

Protective helmets may reduce the risk of death and head injury in motorcycle collisions. However, there remains a large gap in knowledge regarding the effectiveness of helmets in preventing injuries.

The study analyzed the fatalities involved on the accidents involving motorcycle riders and conduct a comprehensive description of the phenomenon using qualitative meta-analysis to minimize the problem. This research sought answers to the following specific objectives. Determine the number of accidents involving motorcycles from 2018 – 2021; and identify the physical condition of the motorcycle drivers involved on the accidents in terms of: injuries and fatalities.

Road accidents have become very common nowadays. As more and people are buying automobiles, the incidences of road accidents are just increasing day by day. Furthermore, people have also become more careless now. Not many people follow the traffic rules. Especially in big cities, there are various modes of transports. Moreover, the roads are becoming narrower and

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume IV, Issue I
August 2022
Available online at https://www.instabrightgazette.com

the cities have become more populated. We need to prevent road accidents to decrease the death rate. Every year thousands of people lose their lives to road accidents. Children must be taught from an early age about traffic rules. They must be taught the value of life and how they can safeguard it. Moreover, the government must pass more stringent laws for people who disobey traffic rules. They must fine people heavily or take strict action when found guilty of breaking these laws irrespective of gender.

The main objective of this research analyzed the records of the Ligao City PNP with regards to the number of accidents involving motorcycles and the number of injuries including fatalities to come up with a recommendation or and empirical output that would be useful to minimize the negative outcome of an accident.

The result of this study would be of helpful for those policy makers to come up with a concrete and doable solution to minimize the fatalities of an accident especially those involving motorcycles. To serve as a guide, the researchers will propose an intervention plan to be considered by the law enforcers and public safety elements to mitigate the problem.

The need for a theory reflects the difficulties in providing logical and rationale explanations as to actually why certain events, people, equipment interacted to generate a usually predictable negative outcome. In this study, there are theories utilized to explain the objectives of the study. A theory is: "systematically organized knowledge applicable in a wide variety of circumstances; especially, a system of assumptions, accepted principles, and rules of procedure devised to analyze, predict, or otherwise explain the nature or behavior of a specified set of phenomena."

Accidents (defined) are unintended and unplanned single or multiple event sequences that are caused by unsafe acts and/or unsafe conditions and may result in immediate or delayed undesirable effects to workers. Risk is defined as the chance of injury, damage or loss relative to the failure potential and the consequences of injuries.

Henrich, an early contributor, to the safety profession had several ideas about how the casual affects that produce injuries aligned to generate the negative outcome. Henrich studied

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ISSN: 2704-3010
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75,000 accidents and sorted the accidents by conditions. Henrich further contributed to the basic understanding of accident causation by developing the widely known Domino Theory. The domino Theory holds that accidents are not random acts of fate that just happen out of the blue. This theory uses the analogy of 5 Dominos standing up of the thin base side and when one falls it will push the other down all tumbling toward injury. The theory is designed to help practitioner identify intervention points, points that, if acted on, will yield a different outcome, a more favorable outcome such as no accident or an event that does not lead to injury or property damage. If you eliminate just one, any one of the first four Domino's that have aligned then the Domino's will not complete the sequenced fall and no injury will result.

This theory would help the researcher explain the first and second objectives because of the principle of the theory that says: "the casual affects that produce injuries aligned to generate the negative outcome" there are factors that is being considered in every phenomenon like an accident it entails human error, road condition, safety consciousness of the driver among others. Meanwhile, on the other hand "favorable outcome such as no accident or an event that does not lead to injury or property damage" considering all the circumstances that are present in an accident the result would always be as assumed because of the unconscious state of the driver before and during the circumstance occurs.

Another theory that has gained respect is the energy release Theory which compares the rate of release of energy and relates to the kind of and severity of injuries. This theory focuses on the prevention of allowing energy to stores up in an uncontrolled way. The first step is to prevent the marshalling of energy by reducing the amount needed and/or providing vent release mechanisms. The next step would be to install control methods that modify the release rate which can be accomplished with the use of space (distance) and time. For example, a fixed barrier guard separates space by not allowing workers or machinery to reach a point of operation. This is a separation by space. Other control techniques include strengthen the object that may release the

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ISSN: 2704-3010
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energy to prevent such release. For example, slings used in hoisting operations are strength tested to withstand 2 times there working load.

This theory discussed the prevention principle of an accident. The third and final objectives of the study focused more on the practical and long-term solution in order to prevent such negative outcome. Further, the theory states that, if control or safety methods are paramount to all the drivers the probability to encounter negative result is more likely can be prevented.

METHODS

The researcher utilized document analysis wherein it is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen, 2009). Analyzing documents incorporates coding content into themes (Bowen,2009). It is because the researchers want to investigate the fatalities and the condition of the involved before the accident happened. Document analysis is a social research method and is an important research tool in its own right, and is an invaluable part of most schemes of triangulation, the combination of methodologies in the study of the same phenomenon (Bowen, 2009). In order to seek convergence and corroboration, qualitative researchers usually use at least two resources through using different data sources and methods. The purpose of triangulating is to provide a confluence of evidence that breeds credibility (Bowen, 2009). The most important criteria that is the design be appropriate for testing the particular hypothesis of the study.

The research utilized document analysis the primary instrument to be used to this research is the public record of the Ligao City Police Station with regards to the number of accidents involving motorcycles from 2018 – present. Document analysis is a form of qualitative research that uses a systematic procedure to analyze documentary evidence and answer specific research questions.

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The researchers sought permission to the station commander of the Ligao City PNP in order to acquire and get access to the public document that was primary instrument of analysis of this paper.

After the permission is acquired immediately the researcher continued the analysis of the data taken from the said office. The data gathered were analyzed per objective of this study and were interpreted based on the methodology mentioned above.

The source of the data for this research were the public document that will be provided by the Ligao City PNP. This is a document analysis, the researcher provided discussion, interpretation and implication for the said data taken from the said police station.

RESULTS AND DISCUSSION

ACCIDENTS INVOLVING MOTORCYCLES FROM 2018 – 2021

Table 1

Accidents Involving Motorcycles from 2018 – 2021

CY	Type of Traffic Incident	Number of incidents	Period
2018	Reckless Imprudence Resulting to Homicide	5	Jan-Dec
	Reckless Imprudence Resulting to Physical Injury	35	
	Reckless Imprudence Resulting to Damage to Property	17	
	Total	**57**	

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ISSN: 2704-3010
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2019	Reckless Imprudence Resulting to Homicide	9	Jan-Dec
	Reckless Imprudence Resulting to Physical Injury	56	
	Reckless Imprudence Resulting to Damage to Property	18	
	Total	**83**	
2020	Reckless Imprudence Resulting to Homicide	5	Jan-Dec
	Reckless Imprudence Resulting to Physical Injury	52	
	Reckless Imprudence Resulting to Damage to Property	92	
	Total	**149**	
2021	Reckless Imprudence Resulting to Homicide	6	Jan-October
	Reckless Imprudence Resulting to Physical Injury	64	
	Reckless Imprudence Resulting to Damage to Property	89	
	Total	**159**	

Based on the data from the Philippine National Police Crime Information Reporting and Analysis System as gathered by the researchers, there were fifty-seven (57) to total number of

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ISSN: 2704-3010
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cases filled and recorded with five (5) reckless imprudence resulting to homicide, thirty-five (35) Reckless Imprudence Resulting to Physical Injury and seventeen (17) Reckless Imprudence Resulting to Damage to Property last 2018. While on 2019, the cases increased to eight three (83) with nine (9) reckless imprudence resulting to homicide, fifty-six (56) Reckless Imprudence Resulting to Physical Injury and eighteen (18) Reckless Imprudence Resulting to Damage to Property. On the other hand, 2020 file of the said agency and system recorded one hundred forty-nine (149) cases with five (5) reckless imprudence resulting to homicide, fifty-two (52) Reckless Imprudence Resulting to Physical Injury and ninety-two (92) Reckless Imprudence Resulting to Damage to Property. And for 2021 one hundred fifty-nine cases were recorded with six (6) reckless imprudence resulting to homicide, sixty-four (64) Reckless Imprudence Resulting to Physical Injury and eighty-nine (89) Reckless Imprudence Resulting to Damage to Property.

The result of the study implies that accidents every year is on the increasing rate. Road traffic accidents the leading cause of death by injury and the tenth-leading cause of all deaths globally now make up a surprisingly significant portion of the worldwide burden of ill-health. An estimated 1.2 million people are killed in road crashes each year, and as many as 50 million are injured, occupying 30 percent to 70 percent of orthopedic beds in developing countries hospitals. Developing countries bear a large share of the burden, accounting for 85 percent of annual deaths and 90 percent of the disability-adjusted life years (DALYs) lost because of road traffic injury.

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PHYSICAL CONDITION OF THE MOTORCYCLE DRIVERS INVOLVED ON THE ACCIDENTS

Table 2

The Physical Condition of the Motorcycle Drivers Involved on the Accidents

Year	Physical Condition		Number of Cases
	Injured	Fatalities	
2018	38	19	**57**
2019	57	26	**83**
2020	135	14	**149**
2021	131	28	**159**

Per report and record of the Philippine National Police Ligao City Police Station, that on 2018 there were thirty-eight (38) injured and nineteen (19) fatalities involved on the fifty-seven (57) total number of cases. While on 2019, eighty-three (83) cases were recorded that comprised of fifty-seven (57) injured and twenty-six (26) fatalities. On the other hand, one hundred forty-nine cases were on file with one hundred thirty-five (135) injured and fourteen (14) fatalities. Lastly, on 2021 one hundred thirty-one (131) injured and twenty-eight (28) fatalities that comprised of the total number of one hundred fifty-nine (159) cases.

The results were attributed to the number of motorcycle use. Asia, as a whole, has the greatest number of registered motorcycles as shown by the total registered vehicles in 2013 and in 2016. The worldwide population increased by 4.10% from 2013 to 2016, and roughly the same for Asia (3.89%) and Southeast Asia (3.72%). During this 3-year period, the total registered vehicles increased by 12.44% worldwide, and by 18.78% in Asia and by 22.16% in Southeast

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ISSN: 2704-3010
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Asia. The number of registered motorcycles also increased significantly worldwide by 24.74% from 2013 to 2016. In particular, the increase in registered motorcycles is higher than the increase in total registered vehicles for Asia, Central America, Europe, Oceania, and South America. In the Philippines, the increase in registered motorcycles is likewise higher than the increase in total registered vehicles, indicating that Filipinos are opting to use motorcycles for mobility.

Set forth by the production and sales of motorcycles and scooters in the Philippines posted double-digit growth in the four months to April from a year ago, when manufacturing facilities and dealerships temporarily suspended operations as lockdowns were enforced in response to the coronavirus pandemic. Data from the Association of Southeast Asian Nations (ASEAN) Automotive Federation (AAF) showed a total of 339,395 motorcycles and scooters were rolled out of manufacturing plants in the Philippines as of end-April, 62 percent higher than the 209,670 units last year.

In April alone, the Philippines assembled 78,555 motorcycles and scooters in contrast to the zero output in the same month last year as the government imposed the enhanced community quarantine – the strictest quarantine level which only permitted essential industries to continue operations.

TRANSLATIONAL RESEARCH

INTERVENTION PLAN TO MINIMIZE THE NUMBER OF ACCIDENT ON THE AREA

Explanatory note: This intervention plan is addressed to all agency concern form the local government units to the national offices that are concern and mandated by the constitution to promote safety among its constituents. In this plan, there are four identified plans of action first is to Identify the factors that causes accident on the area, next is the consolidation of the vital information, followed by involvement of all concern government agencies, and the conceptualization of the new policy.

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Step	Action	Expected Outcomes
1	Identify the factors that causes accident on the area. Consult the barangay officials with regards to frequency of cases on their area. Interview residents as to what intervening factors, they see on the ground that causes the accident. Interview regular motorists regarding their experiences.	Information that will lead to the formulation of policy. A valid and reliable data taken from the triangulation process.
2	Consolidate vital information. Establish a hypothesis out of the information from triangulation process mentioned above. Prepare a report regarding the data gathered.	Uniform data out of the initial step.
3	Involve all concern government agencies Involve all government agencies concern with the safety of the road users. Conduct meeting to discuss the matters mentioned above.	An inter-agency cooperation
4	Conceptualization of the new policy. Create a policy specific to the problems that was discussed.	A problem-based policy that will address the fatality of motorcycle riders in Ligao City

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ISSN: 2704-3010

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Available online at https://www.instabrightgazette.com

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	Consider all information taken from this plan and research. Disseminate information to all concern.	

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ISSN: 2704-3010
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